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10/582,085	06/08/2006	Atsuhiro Kawamoto	2006_0701A	1787

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EXAMINER	
JENNISON, BRIAN W	

ART UNIT	PAPER NUMBER
3742	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,085	KAWAMOTO ET AL.	
	Examiner	Art Unit	
	BRIAN JENNISON	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 September 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-14 and 16-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5-14, 16-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Arguments

1. Applicant's arguments filed 9/2/5009 have been fully considered but they are not persuasive. See Remarks Below.

In regards to applicants argument's on pages 8-10 and 13-14 of the reply referencing claims 1 and 17-21 that Stava does not teach the gradient is controlled according to the length of time elapsed from occurrence of the short circuit. The gradient is always controlled based on time since the definition of gradient for current is di/dt. Therefore if the time of the short circuit is changed. Stava also states the current may be controlled. If the current during the short circuit period is increased the gradient of the current will also increase since the change in current over the change in time (the short circuit period kept the same) will increase the gradient of the current. **See Column 2, Lines 5-45.** Furthermore, time during the short circuit period in Stava is a variable "t" which is indicative of an increase or decrease in current based on the desired operating parameters.

2. Applicant's arguments with respect to claims 5, 10-11 have been considered but are moot in view of the new ground(s) of rejection.

3. Applicant's arguments, on page 11 regarding claim 7, fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a

patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Applicant merely states that Kawai does not disclose the elements of the claims without pointing out the differences and why they are different. Drawing 8 of Kawai shows the current sharply decreasing between t2 and t3 and this is also shown in Drawing 6 during T3.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 6, 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Stava (US 6,501,049).

Stava teaches:

Regarding Claim 1: Fig 1 shows a pulse arc welding method with a current peak shown in Fig 3 at 124 and a base before time 102. **See Column 5, Lines 24-40.** A short is detected at time 102 between the molten ball and base material. A current gradient is applied at time 110a in Fig 3. 110c shows the current decreasing on detecting a neck before short circuit recovery. **See Column 5, Lines 24-40.** The gradient is always controlled based on time since the definition of gradient for current is

di/dt. Therefore if the time of the short circuit is changed the gradient is changed. The current may be controlled. If the current during the short circuit period is increased the gradient of the current will also increase since the change in current over the change in time (the short circuit period kept the same) will increase the gradient of the current. **See Column 2, Lines 5-45.** Furthermore, time during the short circuit period is a variable "t" which is indicative of an increase or decrease in current based on the desired operating parameters.

Regarding Claim 2: Fig 3 shows the current increased at 122 after the neck and after the current has been decreased at 110c.

Regarding Claims 3 and 14: Fig 3 shows the current decreasing at 102 when the short circuit begins and the gradient would be smaller than the gradient at the pulse rise **See Column 5, Lines 30-50 and Column 4, Lines 40-45.**

Regarding Claims 15-16: The length of time elapsed from the short circuit is easily obtained. **See Column 4, Lines 50-55.** The gradient is controlled based on the time elapsed since the gradient will increase more as the elapsed time increases since the current is being increased during this time. **See Fig 3.** The greater the time elapsed the greater the gradient since the current is increased more as time progresses.

Regarding Claim 6: Fig 3 shows an output voltage being detected. The gradient between 110a and 110b is capable of being controlled based upon Vout.

Claim 7-10, 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawai (JP 01-266966) as cited by applicant. References made to machine translation of equivalent document JP 2563465

Kawai teaches:

Regarding Claim 7: Drawing 2 shows a pulse arc welding circuit with a switching element 17 which controls the current output. A welding current value detector 11 for control output current. A welding voltage value detector 12 for controlling output voltage. A short circuit decision circuit 13 judges if the welding state is in short circuit or arc period. Control circuit 14 defines a parameter. Pulse shape circuit 15 controls the pulse output. Control circuit 14 also controls the dip pulse of the waveform. **See Page 3.** Switch element 163 decreases and increases the current. **See page 7.** Driving circuit 18.

Regarding Claims 8 and 9: The switching element 163 is capable of decreasing the current before the recovery from short circuit as shown in Fig 5. **See Page 7.**

Regarding Claim 10: The time is monitored in a section of the circuit by logic elements and is capable of controlling the gradient of the current. Fig 5 shows current Ia having an increase over a time period.

Regarding Claim 12: The output voltage is used for the pulse shape circuit part which can control the gradient. **See Page 5.**

Regarding Claim 13: Fig 5 shows a lower limit of the welding current.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 5, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stava or Kawai in view of Oku (US 3,376,473).

Stava fails to teach:

Regarding Claim 5: the longer the time elapsed the greater the gradient.

Kawai fails to teach:

Regarding Claim 11: the setting section performs output control so as to increase a steepness of the gradient of the current waveform in the short-circuit condition as the length of time elapses from the short circuit increase.

Oku teaches:

Regarding Claims 5 and 11: The gradient of the current is varied. **See Column 4, Lines 1-5.** Adjusting the output characteristics can easily be obtained by adjusting the circuit conditions. Persons having no ordinary skill in the art may easily adjust the welding conditions which include current gradient and elapsed time. **See Column 4, Lines 10-25.**

In view of the teachings of Oku it would have been obvious to one of ordinary skill in the art at the time of the invention to include with the teachings of Stava or Kawai, increasing the gradient of the current since Oku teaches varying the gradient of the current for arc stabilization during the short period.

8. Claims 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai in view of Stava (US 5,001,326).

The teachings of Kawai have been discussed above.

Kawai fails to teach:

Regarding Claims 17: The pulse arc welding device wherein at an occurrence of a short circuit, the secondary control section sharply decreases welding current according to a signal from the arc short-circuit judging section.

Regarding Claim 18: The pulse arc welding device, wherein the setting section measures a length of time elapsed from occurrence of a short circuit according to the signal from the arc short-circuit judging section, and controls a gradient of a current waveform in a short-circuit condition with the length of time from the short-circuit occurrence.

Regarding Claim 19: The pulse arc welding device, wherein the setting section performs output control so as to apply steepness to the gradient of the current waveform in the short-circuit condition as the length of time from the short-circuit occurrence increases.

Regarding Claim 20: The pulse arc welding device wherein the setting section changes the gradient of the current waveform in the short-circuit condition according to the welding output voltage from the welding voltage value detector.

Regarding Claim 21: The pulse arc welding device wherein the setting section defines a lower limit of welding current when the welding current is sharply decreased.

Stava teaches:

Regarding Claim 17: Fig 4 shows the current sharply decreasing with the current controlled by a control circuit C1.

Regarding Claim 18: The time elapsed from T1 to T5 is measured. The gradient PP in Fig 4 depends on the elapsed time. **See Column 9, Lines 20-68.**

Regarding Claim 19: The feedback section controls the output. The gradient is always controlled based on time since the definition of gradient for current is di/dt. Therefore if the time of the short circuit is changed the gradient is changed. The current may be controlled. If the current during the short circuit period is increased the gradient of the current will also increase since the change in current over the change in time (the short circuit period kept the same) will increase the gradient of the current. **See Column 2, Lines 5-45.** Furthermore, time during the short circuit period is a variable "t" which is indicative of an increa

Regarding Claim 20: The output voltage is measured and the gradient may be changed based on this value. **See Column 4, Lines 30-40.**

Regarding Claim 21: Fig 4 shows a lower limit before t0 where the current is sharply decreased.

In view of Stava's teachings it would have been obvious to one of ordinary skill in the art at the time of the invention to include the control circuit for sharply decreasing the current to initiate the short circuit period, the pinch pulse to provide current flow from

feedback to produce a current gradient, Using output voltage to change the gradient for providing feedback to the circuit to control the gradient.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN JENNISON whose telephone number is (571)270-5930. The examiner can normally be reached on M-Th 7:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN JENNISON/
Examiner, Art Unit 3742

12/2/2009

/TU B HOANG/
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